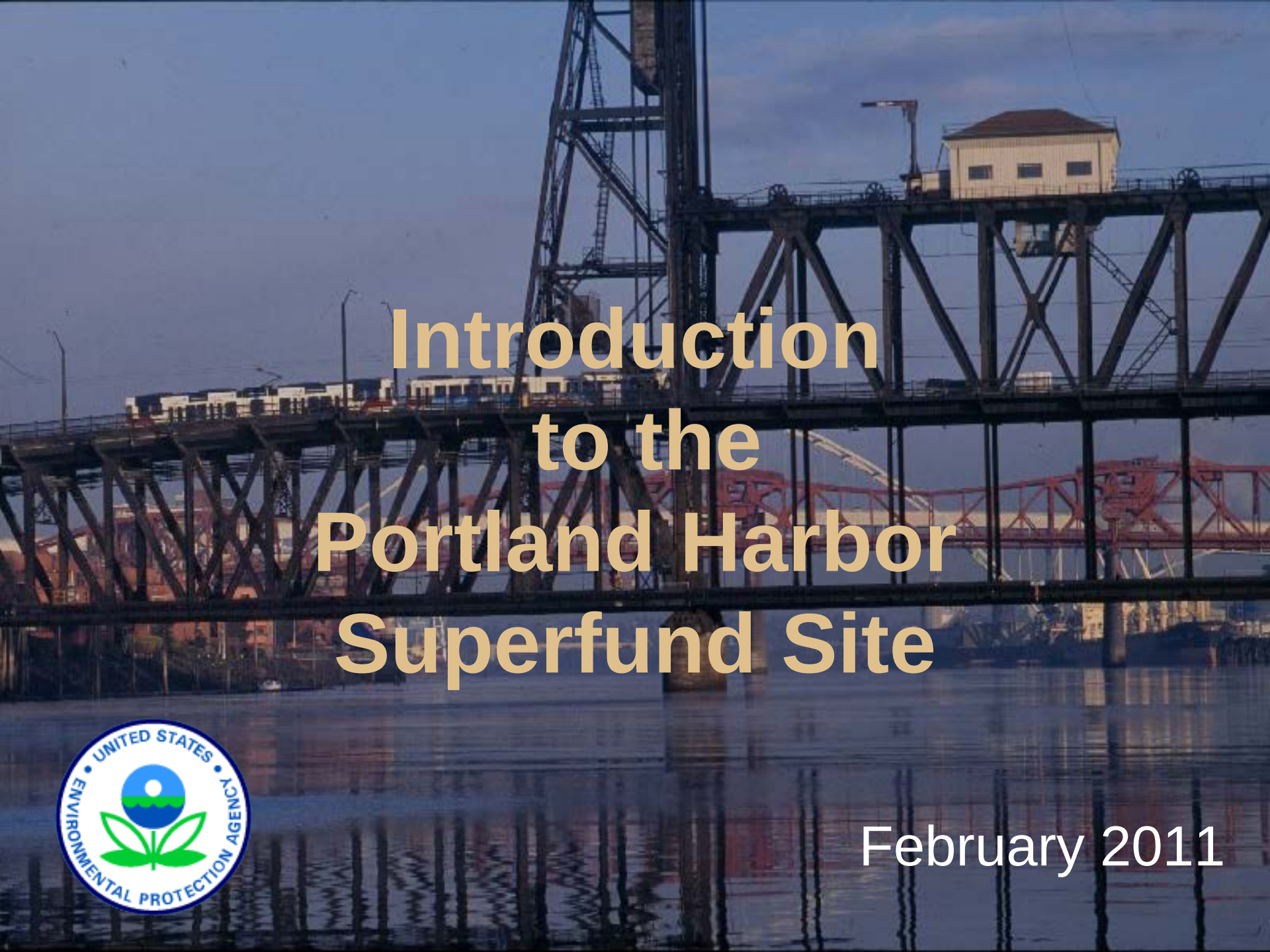


Introduction to the Portland Harbor Superfund Site

February 2011


Portland
Lower
Willamette
Study Area
ISA

Portland Harbor Challenges

- Large site at bottom of large, dynamic watershed
- Many sources and types of contamination
- No federal or state sediment standards; site-specific cleanup levels for Portland Harbor are being developed based on site information
- Large number of Potentially Responsible Parties
- Listed receptors under the Endangered Species Act
- Background/watershed contamination may prevent achievement of some remedial action objectives
- Working harbor and navigational channel
- Located within a populous metropolitan area

Portland Harbor Remedial Investigation and Feasibility Study Timeline

1997 - 2001

Pre-RI/FS

- Site Investigation
- NPL Listing
- AOC
- MOU

2002/2003

Begin Round 1 Work Plan

ROUND 1 SAMPLING:
- Fish Tissue
- Sediment
- Bathymetry

Summer 2004

Approved Work Plan and Field Sampling Plan

ROUND 2A SAMPLING:
- Surface
- Subsurface
- Bioassays

Fall 2004

Round 1 Site Characterization Report

ROUND 2A SAMPLING:
- Surface Water
- Groundwater pilot

Winter 2005

Step 1 Hydro Model Report

ROUND 2A SAMPLING:
- High Flow Surface Water

Summer 2005

Round 2A Data Report

ROUND 2B SAMPLING:
- Sediment Cores
- Subyearling Chinook

Fall 2005

Food Web Model Report

ROUND 2B SAMPLING:
- Benthic (clams)
- Groundwater

Fall 2006

Framework Issues

ROUND 3A SAMPLING:
- lamprey
- Up & downstream
- Surface Water

Spring 2007

Round 2 Report

ROUND 3A SAMPLING:
- Sturgeon
- Storm Water

Summer/Fall 2007

F&T Model Report

ROUND 3B SAMPLING:
- Biota Tissue
- FS (N&E)
- Risk (bioassay)

2008

Round 2 Report Comments

FS SAMPLING:
- Side Scan Sonar
- Leachate Testing
- Sediment Traps
- PRP Search

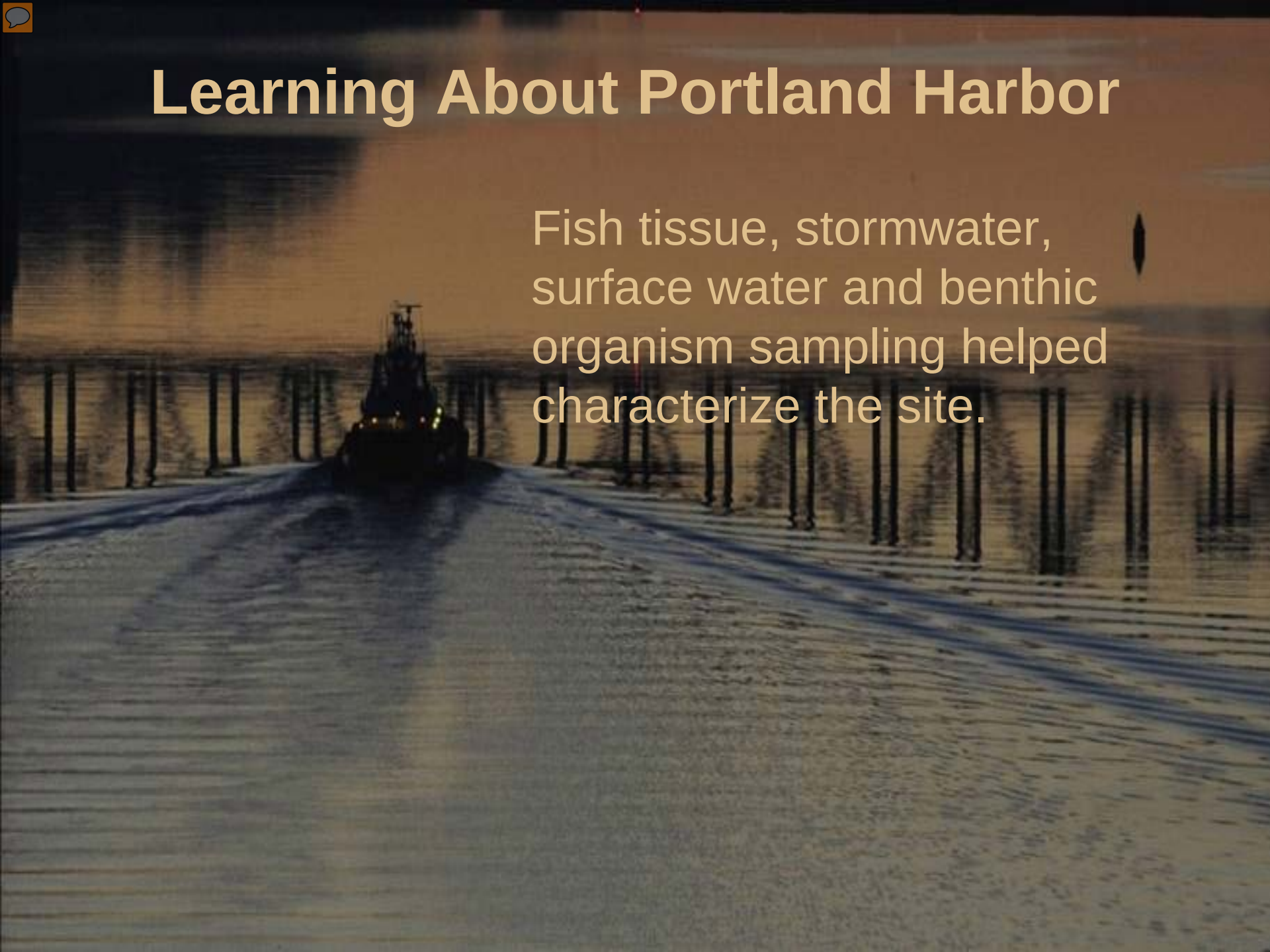
2009

Draft RI and Baseline Risk Assessment

Late 2011

Draft Feasibility Study Report

Learning About Portland Harbor



Fish tissue, stormwater, surface water and benthic organism sampling helped characterize the site.

Learning About Portland Harbor

Sediment sampling found contaminants such as PCBs, PAHs, metals and pesticides from many sources – both current and historic operations,

Remedial Investigation (RI) Report

A significant milestone was reached when the draft RI report and human health and ecological risk assessments were submitted to EPA by the LWG in fall 2009.

The Portland Harbor Remedial Investigation was very comprehensive

- Over 4000 sediment chemistry samples
- 290 sediment bioassays
- 375 tissue samples – 16 species or life stage
- Surface water, groundwater, stormwater
- Bathymetry
- Sediment deposition and erosion

Key findings from the Portland Harbor draft human health and ecological risk assessments:

Human health:

- The greatest risks are posed by consuming fish contaminated with PCBs and dioxins
- Water Quality Standards were exceeded for groundwater and surface water

Ecological receptors:

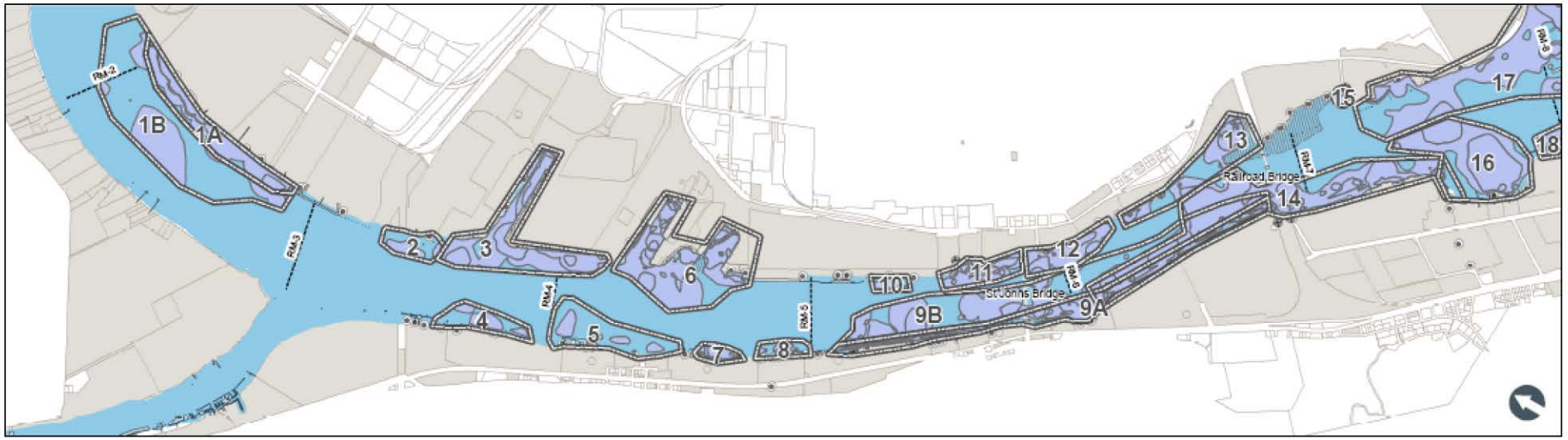
- Fish– PCBs, DDx, TBT
- Birds and mammals – PCBs, DDE and dioxin
- Benthic Community – bioassays, SQGs, TZW

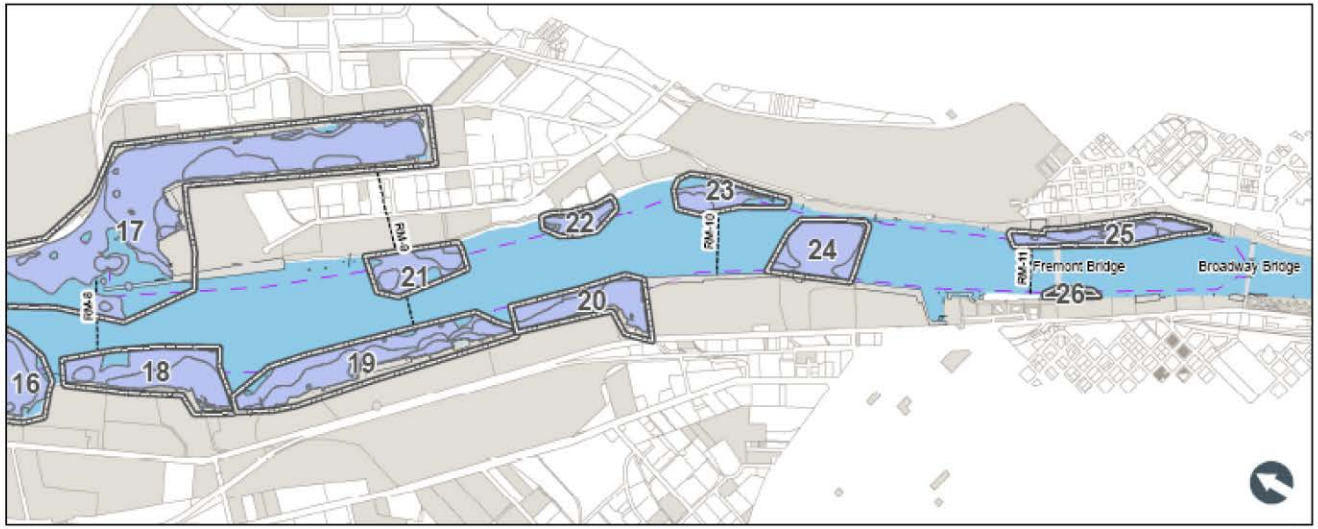
Work is Underway on the Feasibility Study

- Preliminary Remediation Goals (PRGs)
- Areas of Potential Concern (AOPCs)
- Draft Remedial Action Objectives (RAOs)

- Refine Risk Management approach
  - Risk assessment vs. risk management
- Contaminant Fate and Transport Modeling
- Remedial Action Alternative Screening
- Draft Feasibility Study Report (late 2011

Areas of Potential Concern





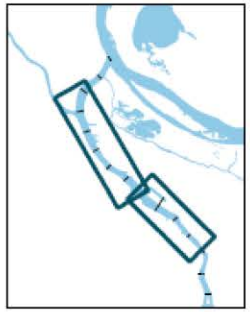
Draft AOPCs for Portland Harbor Site
June 2009
River Mile 1.9 to 11.8

LEGEND

LWG AOPCs_revised 060509
EPA AOPCs 051409

Feet
0 1,000 2,000 3,000 4,000

DRAFT

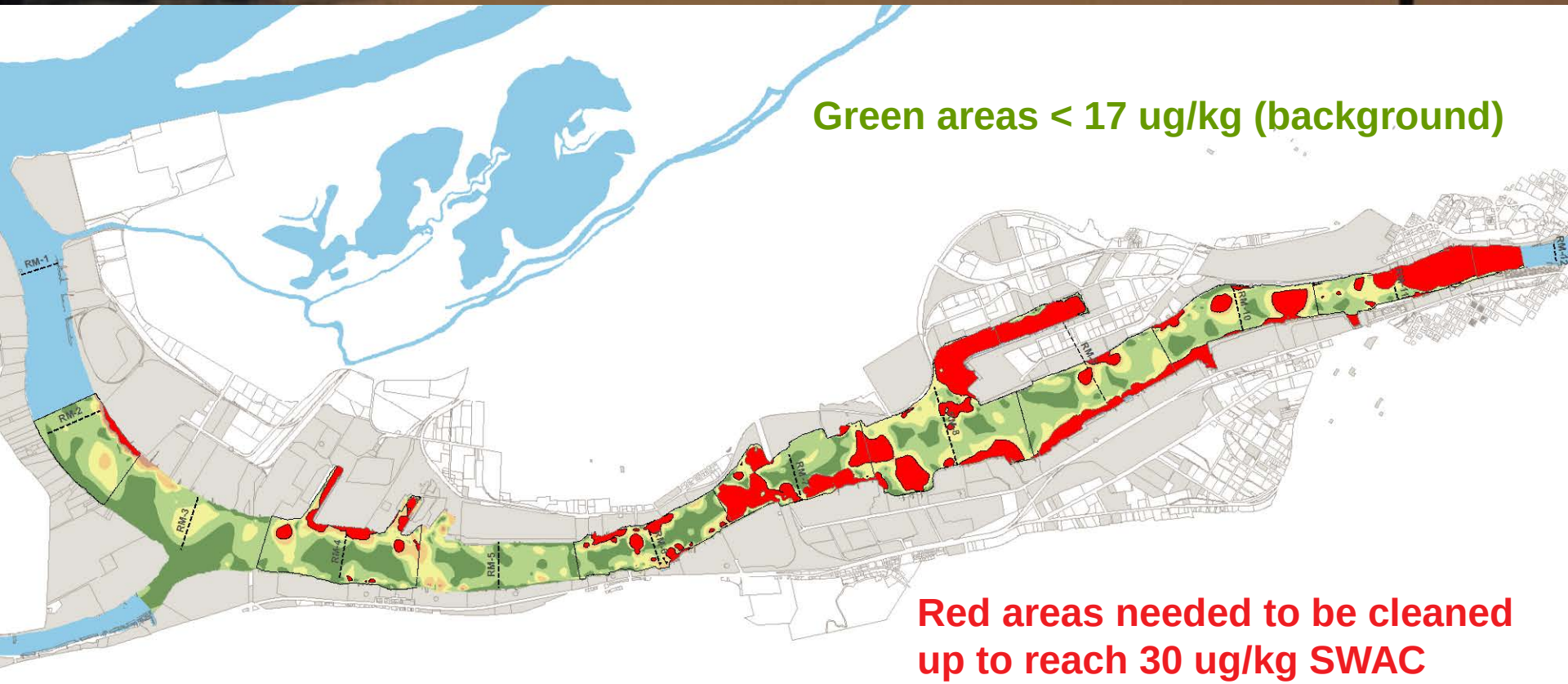


AOPC DEVELOPMENT NOTES
AOPCs are based on the mapping of surface sediment chemistry against the following lines of evidence:
1. Recreational small mouth bass fish consumption preliminary remediation goal (PRG) for total PCBs at a 10-4 cancer risk level using the by-river mile hill topping approach. The PRG equates to 29.54 ug/kg dry weight total PCBs achieved on a Surface-weighted Average Concentration (SWAC) basis by river mile. Use a replacement value equal to the PRG in the hill topping routine.
2. Site-wide hilltopping approach that results in a site-wide target SWAC of 17 ug/kg total PCBs, which represents one estimate of background. Use 17 ug/kg as the replacement value in the hill topping routine.
3. Tribal fisher direct contact PRG for benzo(a)pyrene at a 10-6 cancer risk; hill topping by direct contact sub areas. This PRG equates to a benzo(a)pyrene concentration of 423.25 ug/kg dry weight. Use a replacement value equal to the PRG in the hill topping routine.
4. "Common" Probable Benthic Risk Areas, which are the areas that both EPA and LWG currently agree have benthic risks.

It should be noted that areas outside of the individual AOPCs identified on this figure also pose an unacceptable, although generally lower, risk to human health and the environment throughout the current study area. These areas will be evaluated as part of a site-wide AOPC.

AOPCs were identified prior to completion of the baseline human health and ecological risk assessments and represent a starting point for the Portland Harbor Feasibility Study (FS). AOPCs may expand or contract based on the consideration of additional site information and the results of the baseline human health and ecological risk assessments.

Total PCBs in Sediment



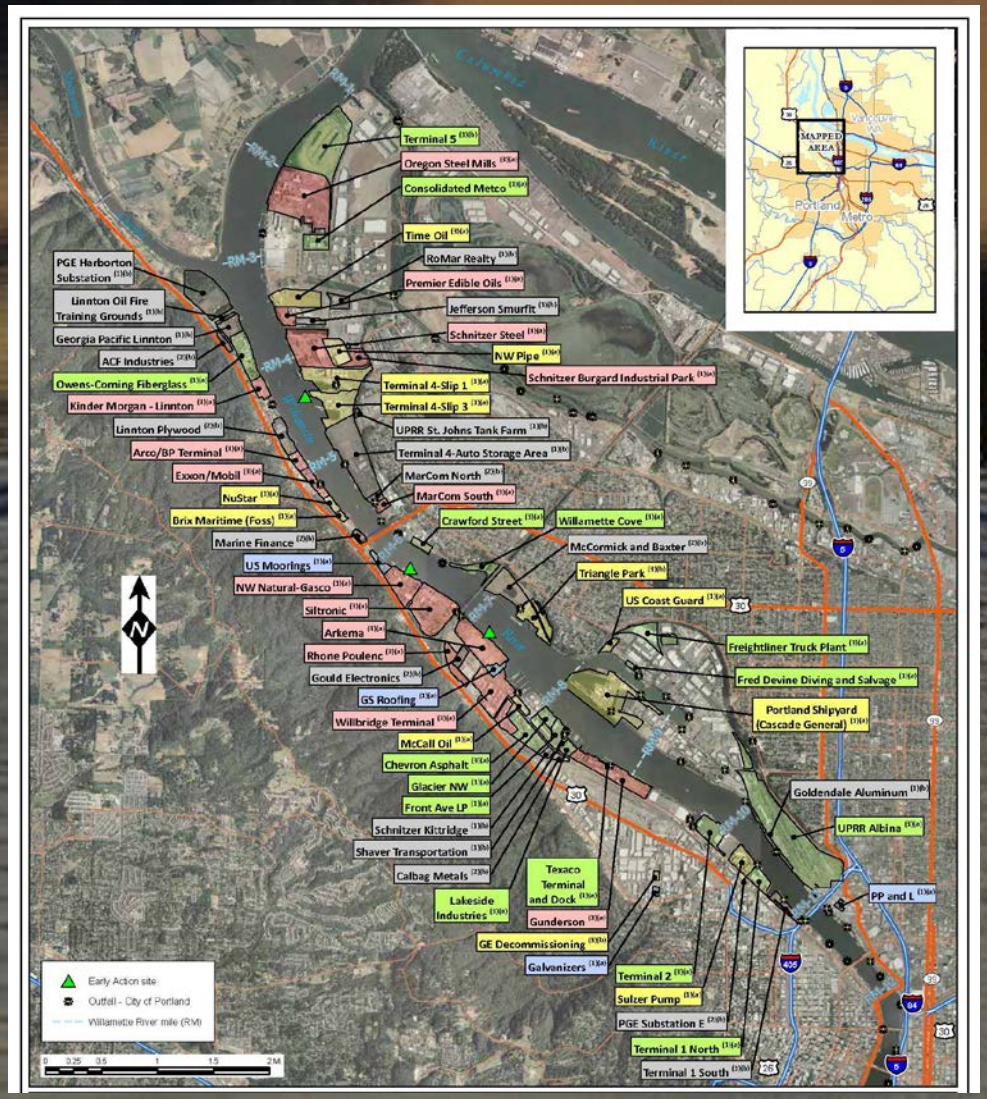
Green areas < 17 ug/kg (background)

Red areas needed to be cleaned up to reach 30 ug/kg SWAC

EPA Expectations for the Draft Feasibility Study Report

- Evaluate a range of alternatives and combinations of technologies to address risk
- Follow NCP framework, 9 criteria analysis
- Present the results of the evaluations in an objective and transparent manner
- Estimate costs
- Identify feasible sediment disposal locations
- Consider MNR on a range of time frames
- Identify hot spots and principle threat material
- Focus on actionable areas where significant risk reduction can be achieved

Source Control



Source Control

- DEQ led source control evaluations at many sites
- Design underway at GASCO and Arkema
- Stormwater source control efforts moving forward

Site source control priority

- High priority site
- Medium priority site
- Low priority site
- Priority to be determined
- Not a current or anticipated future source

DEQ
State of Oregon Department of Environmental Quality

Early Actions

GASCO – Before

Terminal 4 – Before

GASCO – After

Terminal 4 – After

Potentially Responsible Parties (PRP) Search/Allocation

- Over 125 parties received EPA general notice of liability letters between 2000 and 2010
- EPA will continue to issue notice letters as part of its ongoing search and identification of parties that may have responsibility for paying for the cleanup
- PRP have separate allocation process
- EPA hosted meeting in July 2010

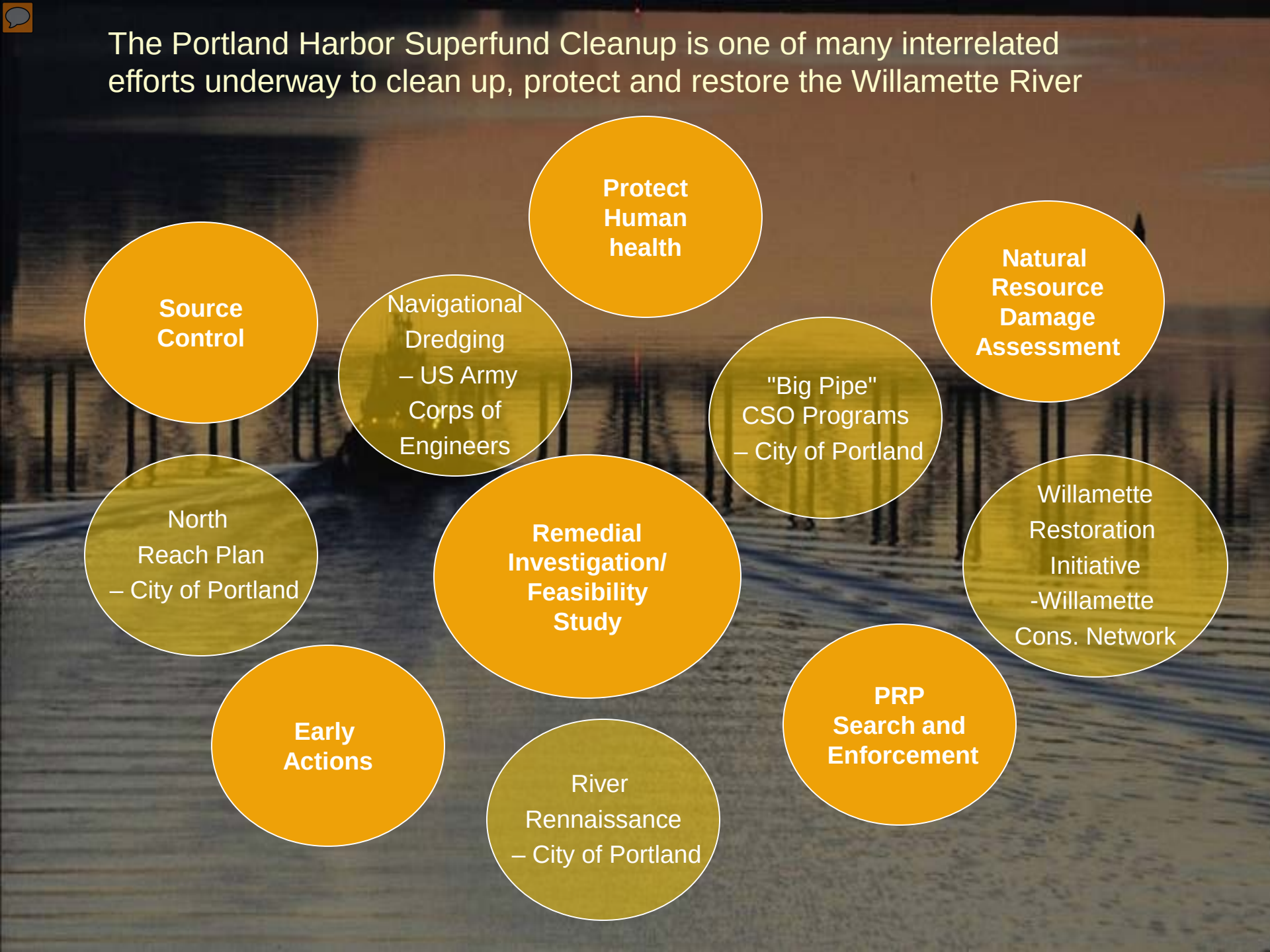
Community Involvement

- The PH Community Advisory Group meets monthly
- Technical Assistance Grant in place
- Regular e-mail updates to over 1300 people with information about the investigation and cleanup
- Project team members make presentations to a wide variety of stakeholders and audiences.
- Community Involvement Plan is being updated

Next Steps and Decision Points: July '11 to ROD

- Proposed Plan Development (2011 - 2012)
  - Begin drafting based on draft FS
  - National Remedy Review Board and CSTAG reviews
- Proposed Plan Public Comment (2012)
  - Public comment process may be extended
- ESA Consultation
- Tribal Consultation
- State Concurrence
- **Record of Decision** by end of 2012?
  - Need high quality, transparent draft FS to meet schedule

The Portland Harbor Superfund Cleanup is one of many interrelated efforts underway to clean up, protect and restore the Willamette River



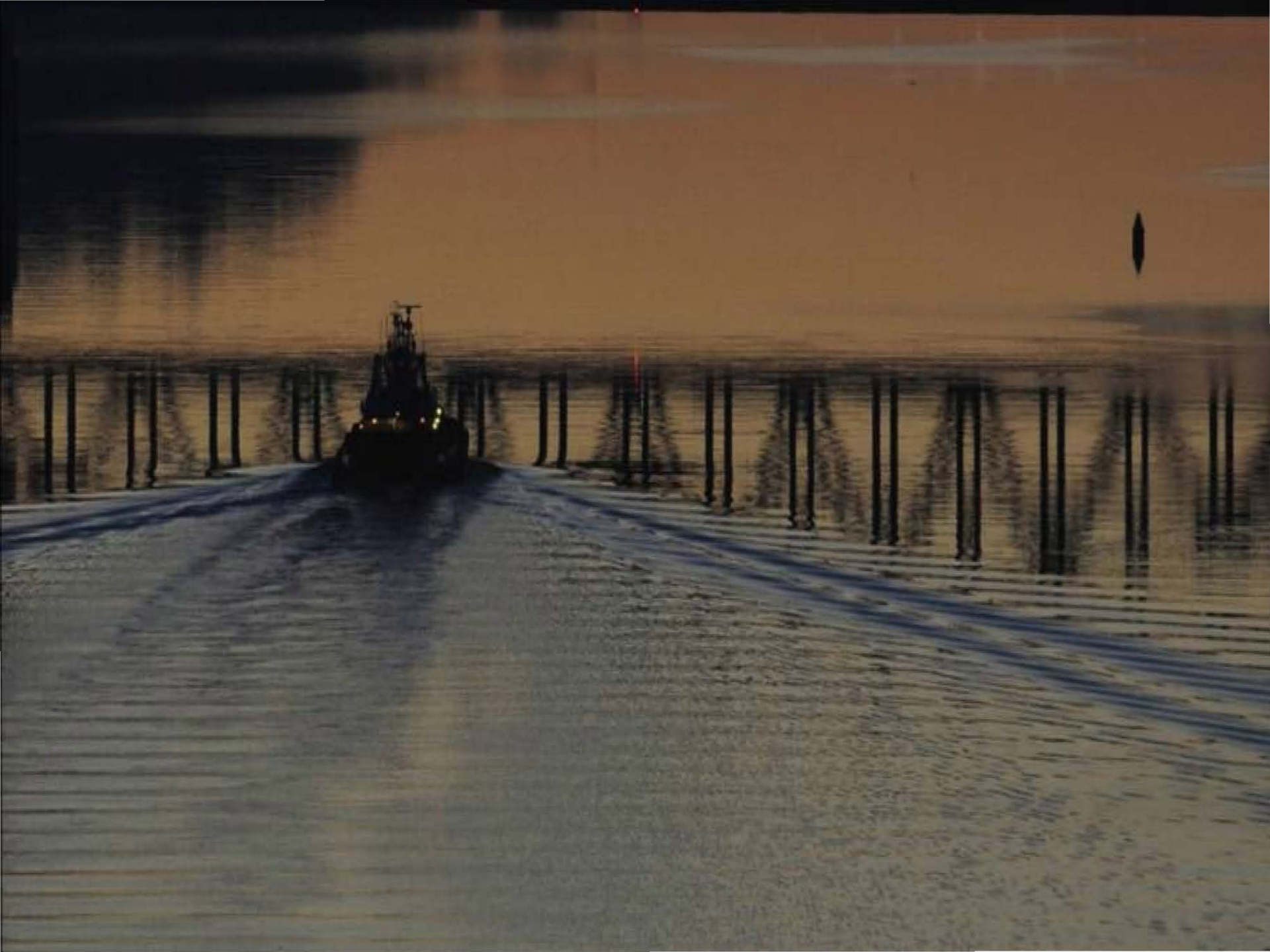
EPA Contacts/Additional Information

- Chip Humphrey (503) 326-2678
- Kristine Koch (206) 553-6705
- Sean Sheldrake (206) 553-1220
- Lori Cora - Site Attorney (206) 553-1115
- Judy Smith – Public Affairs (503) 326-6994

http://www.epa.gov/Region10/PortlandHarbor

For more information

- www.epa.gov/region10/PortlandHarbor
- Information Repositories
  - **St. Johns Library - key documents**
  - NW District Library
  - Main Library
- Superfund Records Center in Seattle



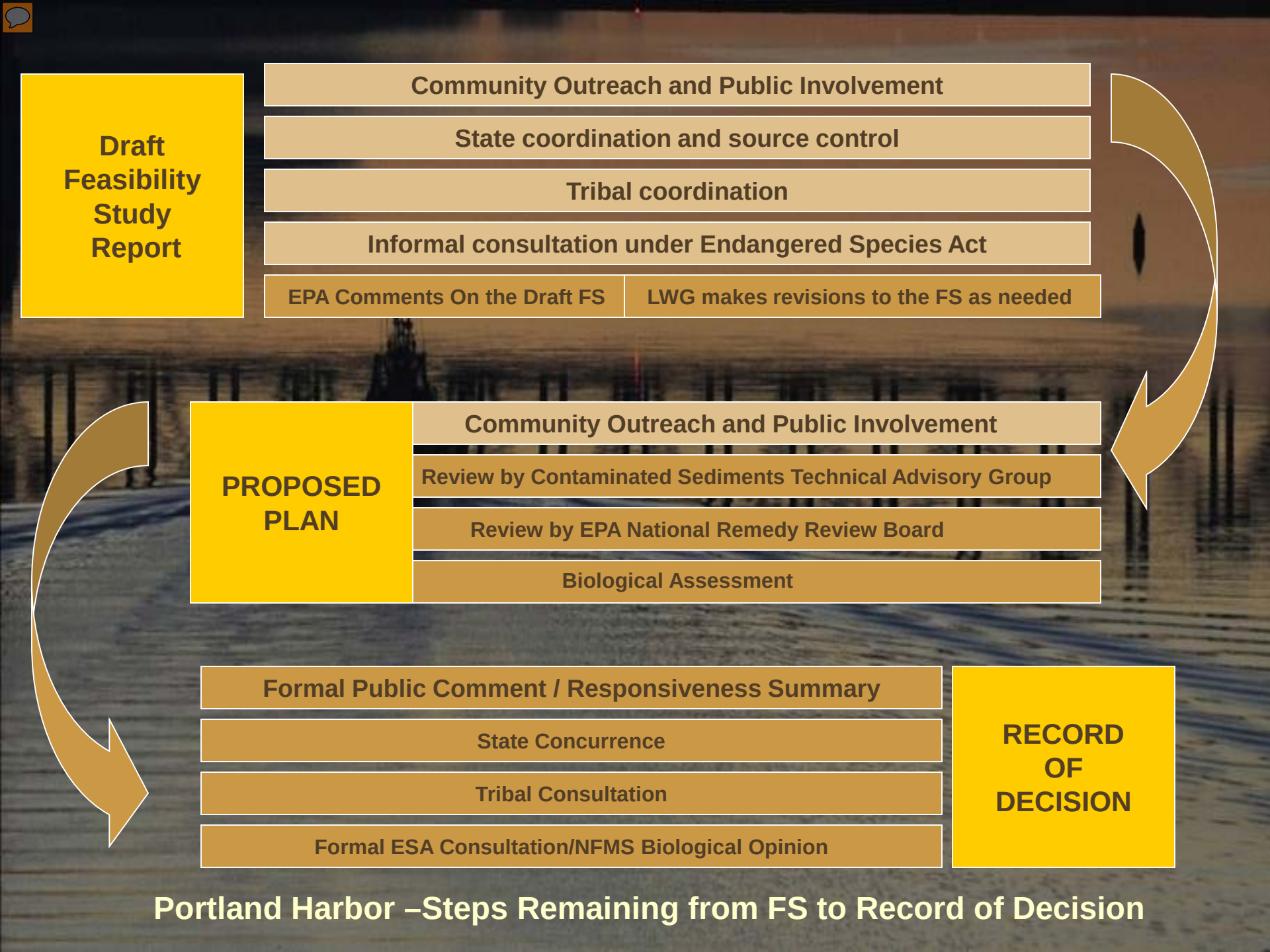
How the project is organized

A group of ten potentially responsible parties, the "Lower Willamette Group" signed an Administrative Order on Consent with EPA to complete the Remedial Investigation and Feasibility Study. The parties are:

- City of Portland
- Atofina (Arkema)
- ConocoPhillips
- Northwest Natural
- Chevron
- Port of Portland
- Gunderson
- Time Oil
- Union Pacific Railroad
- Oregon Steel

Collaboration

- Collaboration with many affected stakeholders has been key to finding solutions to complex and unique problems during the RI.
- It takes time to work through the issues, but it speaks strongly for all involved that issues are discussed and resolved in a respectful, deliberate and collaborative manner.
- Although EPA has been directive when necessary, EPA and the LWG have been able to work out their differences without having to resort to a formal dispute resolution process.
- Collaboration will continue to be a priority beyond the FS and ROD as we design and implement the remedy.
- Collaboration takes time.



Portland Harbor –Steps Remaining from FS to Record of Decision